

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:  
Jill V. Watson, et al

Serial No. 10/803,710

Group Art Unit: 1795

Filed: March 18, 2004

Examiner: Julian A. Mercado

For: SEPARATOR FOR A BATTERY HAVING A ZINC ELECTRODE

APPEAL BRIEF

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

This Appeal Brief is being filed within two months from the  
Notice of Appeal, filed February 8, 2008.

The fees required under Section 41.20(b)(2) are dealt with  
in the Transmittal accompanying this Appeal Brief.

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### **I. Real party in interest**

The instant application was filed in the name of the inventors, Jill V. Watson and C. Glen Wensley.

The real party in interest is Celgard Inc., the assignee of record in the instant application.

### **II. Related appeals and interferences**

There are no related appeals or interferences regarding the instant application.

### **III. Status of the claims**

Claims 12 and 28 have been rejected under 35 U.S.C. § 112 second paragraph.

Claims 1-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,298,666 in view of U.S. Patent No. 3,811,957.

Claims 1-32 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,479,190 in view of U.S. Patent No. 4,298,666.

Claims 1-32 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 of U.S. Patent No. 6,479,190 in view of U.S. Patent No. 4,298,666.

Claims 1-32 are the subject of this appeal.

Claims 1 and 17 are the subject of this appeal and should be considered separately.

#### **IV. Status of Amendments**

No Claim was amended after the Final Rejection and prior to this Appeal.

#### **V. Summary of claimed subject matter**

The following is a concise explanation of the subject matter defined in independent claims 1 and 17 and dependent claims 12 and 28.

According to claim 1, the instant invention is a battery separator (Specification, Page 7, Lines 1-3), which comprises: a microporous membrane (Specification, Page 7, Lines 5-19), and a coating on at least one surface of said membrane, wherein said coating comprising a mixture of 25-40 weight % polymer and 60-75 weight % surfactant combination (Specification, Page 7, Line 21 - Page 8, Line 6), wherein said polymer being cellulose acetate (Specification, Page 8, Lines 8-21), and said surfactant combination comprising a first surfactant and a second surfactant (Specification, Page 8, Line 23 - Page 9, Line 12), said first surfactant having an active ingredient selected from the group consisting of organic ethers (Specification, Page 10,

Lines 4-13), and said second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate (Specification, Page 10, Lines 15-24).

According to claim 12, the instant invention is the separator of claim 1, wherein said coating being on both surfaces of said membrane (Specification, Page 7, Lines 23-24), wherein said separator being adapted for wetting by an aqueous electrolyte (Specification, Page 8, Line 24 - Page 9, Line 12), wherein said separator being freshly coated, and said separator being wetted within 8 seconds or less (Specification, Page 12, Lines 15-16).

According to claim 17, the instant invention is a battery having a zinc electrode (Specification, Page 5, Lines 5-20), comprising: a first electrode (Specification, Page 5, Line 23 to Page 6, Line 3), a second electrode (Specification, Page 6, Lines 5-9), an electrolyte (Specification, Page 6, Lines 11-21), and a separator disposed between said first electrode and said second electrode (Specification, Page 5, Line 18), and said electrolyte being in communication with said electrodes via said separator (Specification, Page 5, Lines 19-20), wherein said separator comprises: a microporous membrane (Specification, Page 7, Lines 5-19), and a coating on at least one surface of said membrane, wherein said coating comprising a mixture of 25-40 weight % polymer and 60-75 weight % surfactant combination

(Specification, Page 7, Line 21 - Page 8, Line 6), wherein said polymer being cellulose acetate (Specification, Page 8, Lines 8-21), and said surfactant combination comprising a first surfactant and a second surfactant (Specification, Page 8, Line 23 - Page 9, Line 12), said first surfactant having an active ingredient selected from the group consisting of organic ethers (Specification, Page 10, Lines 4-13), and said second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate (Specification, Page 10, Lines 15-24).

According to claim 28, the instant invention is the separator of claim 17, wherein said coating being on both surfaces of said membrane (Specification, Page 7, Lines 23-24), wherein said separator being adapted for wetting by an aqueous electrolyte (Specification, Page 8, Line 24 - Page 9, Line 12), wherein said separator being freshly coated, and said separator being wetted within 8 seconds or less (Specification, Page 12, Lines 15-16).

## VI. Grounds of rejection to reviewed on appeal

Since Applicant requests separate consideration of dependent claims 12 and 28, and claims 1-16 and 17-32, the rejection/objection shall be grouped by claim.

1. Claims 12 and 28 are rejected under 35 U.S.C. 112, second paragraph because of the use of "freshly" one time in each of claim 12 and 28. Those places are (rejected term italicized):

- a. Claim 12, Lines 1-3 - "The separator according to Claim 11, wherein said separator being *freshly* coated, and said separator being wetted within 8 seconds or less."
- b. Claim 28, Lines 1-3 - "The battery according to Claim 27, wherein said separator being *freshly* coated, and said separator being wetted within 8 seconds or less."

In each instance, the Examiner states that "freshly" is a relative term which renders the claim indefinite because the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

2. Claims 1-16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,298,666 in view of U.S. Patent No. 3,811,957.

3. Claims 17-32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,298,666 in view of U.S. Patent No. 3,811,957.

4. Claims 1-16 stand rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 6,479,190 in view of U.S. Patent No. 4,298,666.

5. Claims 17-32 stand rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 6,479,190 in view of U.S. Patent No. 4,298,666.

6. Claims 1-16 stand rejected on the ground of nonstatutory obviousness-type double patenting as being obvious over U.S. Patent No. 6,479,190 in view of U.S. Patent No. 4,298,666.

7. Claims 17-32 stand rejected on the ground of nonstatutory obviousness-type double patenting as being obvious over U.S. Patent No. 6,479,190 in view of U.S. Patent No. 4,298,666.



## VII. Argument

Claims 12 and 28, for the reasons explained hereinafter, are not indefinite under 35 U.S.C. 112 due to the use of the word "freshly"; thus, the above mentioned 112 rejections are improper, and they must be removed.

Claims 1-16, for the reasons explained hereinafter, are not unpatentable under 35 U.S.C. 103(a) based on U.S. Patent No. 4,298,666 in view of U.S. Patent No. 3,811,957; thus, the above mentioned 103 rejections are improper, and they must be removed.

Claims 17-32, for the reasons explained hereinafter, are not unpatentable under 35 U.S.C. 103(a) based on U.S. Patent No. 4,298,666 in view of U.S. Patent No. 3,811,957; thus, the above mentioned 103 rejections are improper, and they must be removed.

Claims 1-16, for the reasons explained hereinafter, are not obvious under 35 U.S.C. 103(a) based on U.S. Patent No. 6,479,190 in view of U.S. Patent No. 4,298,666; thus, the above mentioned 103 rejections are improper, and they must be removed.

Claims 17-32, for the reasons explained hereinafter, are not obvious under 35 U.S.C. 103(a) based on U.S. Patent No.

6,479,190 in view of U.S. Patent No. 4,298,666; thus, the above mentioned 103 rejections are improper, and they must be removed.

Claims 1-16, for the reasons explained hereinafter, are not obvious on the ground of nonstatutory obviousness-type double patenting; thus, the above mentioned double patenting rejections are improper, and they must be removed.

Claims 17-32, for the reasons explained hereinafter, are not obvious on the ground of nonstatutory obviousness-type double patenting; thus, the above mentioned double patenting rejections are improper, and they must be removed.

A. CLAIMS 12 AND 28 ARE NOT INDEFINITE UNDER 35 U.S.C.

112

Claims 12 and 28 are not indefinite under 35 U.S.C. 112 due to the use of the word "freshly" for the reasons stated below.

It is clear from cases decided by the Federal Circuit that the definiteness of claim language must be analyzed, not in a vacuum, but in light of (1) the content of the particular application disclosure, (2) the teachings of the prior art, and (3) the claim interpretation that would be given by one possession the ordinary level of skill in the pertinent art at the time the invention was made. See, for example, *In re*

*Marosi*, 710 F.2d 799, 218 U.S.P.Q. 289 (Fed. Cir. 1983);  
*Rosemount, Inc. v. Beckman Instruments, Inc.*, 727 F.2d 1540, 221  
U.S.P.Q. 1 (Fed. Cir. 1984); *W.L. Gore & Assocs., Inc. v.*  
*Garlock, Inc.*, 721 f.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983).

In *Slimfold Manufacturing Co. v. Kinkead Industries*, 810  
F.2d 1113, 1 U.S.P.Q.2d 1563 (Fed. Cir. 1987), the Federal  
Circuit held that the lack of antecedent support for a claim  
limitation does not necessarily render the claim invalid for  
indefiniteness. According to the Federal Circuit, as long as  
the scope of the claim, when read in light of the specification,  
is clear to one of ordinary skill in the art, the definiteness  
requirement has been satisfied. See *id.* at 1116-17, 1  
U.S.P.Q.2d at 1566-67.

M.P.E.P. §2111.01 clearly states that:

During examination, the claims must be interpreted as  
broadly as the terms allow. *In re American Academy of*  
*Science Tech Center*, 367 F.3d 1359, 1369, 70  
U.S.P.Q.2d 1827, 1834 (Fed. Cir. 2004)... This means  
that the words of the claim must be given their plain  
meaning unless applicant has provided a clear  
definition in the specification. *In re Zletz*, 893  
F.2d 319, 321, 13 U.S.P.Q.2d 1320, 1322 (Fed. Cir.  
2004) (Ordinarily, simple English words whose meaning  
is clear and unquestionable, absent any indication  
that their use in a particular context changes their  
meaning, are construed to mean exactly what they say.

"Freshly," as used in claims 12 and 28 of the instant  
application, is an adverb which modifies the verb "coated." In

claims 12 and 28, the adverbial function of "freshly" is to describe when the battery separator was coated with a polymer and a first and second surfactant prior to being wetted. Referring to the dictionary definitions from *Webster's New Twentieth Century Dictionary, 2<sup>nd</sup> Edition* (1983) and *Webster's Third New International Dictionary* (1993), the term "freshly" is defined as "recently; just now; newly and in a fresh manner". Based on the dictionary definitions, the adverbial function, and the knowledge of one of ordinary skill in the art, a person of ordinary skill in the art would be reasonable apprised that the scope of the invention would include a battery separator which was newly or recently coated with a polymer and a first and second surfactant.

**B. CLAIMS 1-16 ARE PATENTABLE UNDER 35 U.S.C. 103(a)**

Claims 1-16 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 4,298,666 (hereinafter Taskier) in view of U.S. Patent No. 3,811,957 (hereinafter Buntin) for the reasons stated below.

By ignoring the data, examples, and unexpected results presented in the specification of Applicant's instant application, the Examiner claims to have established a prima facie case of obviousness. An applicant can rebut a prima facie case of

obviousness by presenting comparative test data showing that the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have. See *In re Dillon*, 919 F.2d at 692-93, 16 U.S.P.Q.2d at 1901; *In re Chupp*, 816 F.2d 643, 646, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987); *In re Merck*, 800 F.2d 1091, 1098, 231 U.S.P.Q. 375, 380 (Fed. Cir. 1986); *In re Payne*, 606 F.2d 303, 315-16, 203 U.S.P.Q. 245, 256 (C.C.P.A. 1979). In numerous cases involving chemical inventions, the courts and the board have held that a showing of unexpected results rebutted the examiner's prima facie case of obviousness. See, e.g., *In re Hedges*, 783 F.2d 1038, 1041, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986); *In re May*, 574 F.2d 1082, 1094-95, 197 U.S.P.Q. 601, 611 (C.C.P.A. 1978); *In re Orfeo*, 440 F.2d 439, 442, 169 U.S.P.Q. 487, 489 (C.C.P.A. 1971); *Ex parte Ebata*, 19 U.S.P.Q.2d 1952, 1956 (Bd. Pat. App. & Int. 1991).

In the instant application, the Examples section describes and illustrates six samples in Tables 1, 2, and 3. (Page 13, Line 18 - Page 16, Table 3). Referring to Table 1, it is illustrated that Sample #1 utilized an organic ether as its sole surfactant, as described in Buntin. Sample #6 illustrates the utilization of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant, as similar to the ethoxylated 2-ethylhexyl phosphate described in Taskier. Samples #2 through #5 illustrate the utilization of both an organic ether and an

oxirane polymer with 2-ethylhexyl dihydrogen phosphate as a combination of surfactants which is described in neither Buntin nor Taskier. Referring now to Table 3, Samples #1 through #6 illustrate the duration (in seconds) required to wet a separator after a duration of 0 days, 22 days, 48 days, 104 days, 122 days, and 256 days of storage at 70°C. The Examiner has completely ignored the fact that Sample #1 (organic ether as its sole surfactant) takes an increasingly longer time to wet as the length of its storage increase (from 21 seconds at 0 days to 91 seconds at 256 days). The Examiner has also ignored the fact that Sample #6 (oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant) loses its ability to wet as the length of its storage increases (from 5 seconds at 0 days to inability to wet at 256 days). In contrast, Samples #2 through #5 require less time to wet as the length of its storage increases (ranging from 7 to 12.3 seconds at 0 days to instantaneous wetting at 256 days). It was clearly an error by the Examiner in failing to properly consider the comparative test data and unexpected results included in the specification of the instant application.

In the alternative, neither Taskier nor Buntin contain any information about using a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl

dihydrogen phosphate. Applicant's instant invention calls for a separator comprised of a microporous membrane and a coating on at least one surface of the membrane. (Page 7, Lines 1-3). The coating is comprised of a polymer selected from the group consisting of cellulose acetate (Page 8, Lines 8-9) and a surfactant combination comprised of a first surfactant consisting of organic ethers (Page 10, Lines 4-5) and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate (Page 10, Lines 15-16). Neither Taskier nor Buntin make any allusion to a combination of a first surfactant which is (1) inert to the electrolyte, (2) not soluble or readily soluble in the electrolyte, and (3) adherent to the membrane, and a second surfactant which is (1) inert to the electrolyte and (2) increases the wetting speed and stability of the membrane without interfering with long term membrane storage life. There is no disclosure within Taskier or Buntin that would allow for one skilled in the art to predict that a combination of a first and second surfactant would in any manner result in the superior surfactant combination of Applicant's instant application.

The prior art reference or combination of references relied upon by the Examiner must teach or suggest all of the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1467, 1478 (Fed. Cir. 1997); *In re Wilson*, 424

F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."). The teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). In this instance, from the information detailed above, it is clear that Taskier and Buntin fail to teach or suggest all the limitations of Applicant's claims.

The subject matter of Applicant's current application involves a combination of a first and second surfactant used in conjunction with a polymer to coat a battery separator. The combination of the first and second surfactant has a dual purpose with the first purpose being to wet the membrane in aqueous electrolyte in a short period of time (Page 8, Line 24 - Page 9, Line 2) and the second purpose being to maintain the long term storage life of the membrane (Page 10, Lines 1-2). Taskier discloses the use of ethoxylated 2-ethylhexyl phosphate as a surfactant and Buntin discloses the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. Additionally, there is no disclosure within Taskier or Buntin that would allow



for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane.

Based on *KSR v. Teleflex, Inc.* 127 S.Ct. 1727, 167 L.Ed2d 705, 2007 U.S. Lexis 4745 (2007), the obviousness question may be broken down to: Is the invention predictable based upon the prior art? *Id.* at 1740, 721.

Simply, the answer to that question is "no." Hindsight reconstruction is not permitted as the Federal Circuit has repeatedly warned that the requisite motivation to modify a reference must come from the prior art, not Applicant's specification. See *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531-32 (Fed. Cir. 1988) ("there must be a reason or suggestion in the art for selecting the procedure used, other than the knowledge learned from the applicant's disclosure.") Using an Applicant's disclosure as a blueprint to reconstruct the claimed invention from isolated piece of the prior art contravenes the statutory mandate of section 103 of judging obviousness at the point in time when the invention was made. See *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907, 5 U.S.P.Q.2d 1788, 1792 (Fed. Cir. 1988).

Additionally, it is obvious from the Examiner's response to Applicant's first amended application that the Examiner misunderstood Applicant's argument as being one-fold as evidenced by the reasons stated above.

In the alternative, to establish a *prima facie* case, the PTO must satisfy three requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Skinner*, 2 U.S.P.Q.2d 1788, 1790 (Bd. Pat. App. & Int. 1986).

Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991) (While the idea of using a monkey gene to probe for a homologous human gene may have been "obvious to try," many pitfalls existed that would have eliminated a reasonable expectation of successfully obtaining the EPO gene. "Hindsight is not a justifiable basis on which to find that ultimate achievement of a long sought and difficult scientific goal was obvious."); *In re Erlich*, 3 U.S.P.Q.2d 1011,

1016 (Bd. Pat. App. & Int. 1986) ("[A]t the time the invention was made, one of ordinary skill in the art would have been motivated to produce monoclonal antibodies specific for human fibroblast interferon using the method of [the prior art] with a reasonable expectation of success.").

Lastly, the prior art reference or combination of references must teach or suggest all the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1476, 1478 (Fed. Cir. 1997); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."). And the teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

The Examiner rejected claims 1-16 citing Taskier as disclosing the use of ethoxylated 2-ethylhexyl phosphate as a surfactant. (Column 21, Lines 65-67). However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. The Examiner then relies on Buntin as disclosing the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. (Column 12, Lines 5-8). Again, however, there is no disclosure within Buntin as to the use of

an oxirane polymer with 2-ethylhexyl dihydrogen phosphate alone, or in combination with an additional surfactant. The Examiner erroneously relies on Taskier's mentioning of the use of polymers and copolymers as a precursor film utilized to prepare a microporous film as the motivation to use the combination of surfactants described in Applicant's disclosure. (Column 7, Lines 58-61, Column 8, Line 67 et seq., and Column 17, Lines 63-66). The polymers and copolymers disclosed in Taskier as precursor film are make no allusion as to the use of surfactants to wet the membrane in aqueous electrolyte in a short period of time or maintain the long term storage life of the membrane. Therefore, the Office has not made out a prima facie case of obviousness as the instant invention calls for the use of a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate which is not taught or suggested by either Taskier or Buntin. In the instant case, the proposed modification of the prior art would not have a reasonable expectation of success to wet the membrane in a short period of time and maintain the long term storage life of the membrane, determined from the vantage point of the skilled artisan at the time the invention was made, and therefore the prima facie case must fail and the claims allowed.

In order for the Office to make out a prima facie case it must satisfy the three requirements. For the first requirement, the Examiner must show the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. There is no disclosure within Taskier or Buntin that would allow for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane. Taskier goes so far as to state that, "While it is preferred that the microporous substrate be rendered immediately wettable for commercial reasons, it is sufficient for purposes of operability if it eventually wets upon contact with the aqueous alkaline electrolyte solution." (Column 22, Lines 12-16). Buntin only states that polypropylene is not easily wettable and that a variety of surfactants, including an organic ether, may aid in wetting the membrane. (Column 11, Line 59 - Column 12, Line 10). Buntin makes no allusion to wetting times or long term

storage life. Third, the prior art reference or combination of references must teach or suggest all the limitations of the claims. By combining the variety of surfactants disclosed in Taskier with the variety of surfactants disclosed in Buntin, the Examiner argues that Taskier and Buntin teach all of the limitations of the claims in the instant application. However, there is no suggestion within either Taskier or Buntin to combine a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate with the goal of decreased wetting times without affecting long term storage life.

**C. CLAIMS 17-32 ARE PATENTABLE UNDER 35 U.S.C. 103(a)**

Claims 17-32 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 4,298,666 (hereinafter Taskier) in view of U.S. Patent No. 3,811,957 (hereinafter Buntin) for the reasons stated below.

By ignoring the data, examples, and unexpected results presented in the specification of Applicant's instant application, the Examiner claims to have established a prima facie case of obviousness. An applicant can rebut a prima facie case of obviousness by presenting comparative test data showing that the claimed invention possesses unexpectedly improved properties or

properties that the prior art does not have. See *In re Dillon*, 919 F.2d at 692-93, 16 U.S.P.Q.2d at 1901; *In re Chupp*, 816 F.2d 643, 646, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987); *In re Merck*, 800 F.2d 1091, 1098, 231 U.S.P.Q. 375, 380 (Fed. Cir. 1986); *In re Payne*, 606 F.2d 303, 315-16, 203 U.S.P.Q. 245, 256 (C.C.P.A. 1979). In numerous cases involving chemical inventions, the courts and the board have held that a showing of unexpected results rebutted the examiner's prima facie case of obviousness. See, e.g., *In re Hedges*, 783 F.2d 1038, 1041, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986); *In re May*, 574 F.2d 1082, 1094-95, 197 U.S.P.Q. 601, 611 (C.C.P.A. 1978); *In re Orfeo*, 440 F.2d 439, 442, 169 U.S.P.Q. 487, 489 (C.C.P.A. 1971); *Ex parte Ebata*, 19 U.S.P.Q.2d 1952, 1956 (Bd. Pat. App. & Int. 1991).

In the instant application, the Examples section describes and illustrates six samples in Tables 1, 2, and 3. (Page 13, Line 18 - Page 16, Table 3). Referring to Table 1, it is illustrated that Sample #1 utilized an organic ether as its sole surfactant, as described in Buntin. Sample #6 illustrates the utilization of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant, as similar to the ethoxylated 2-ethylhexyl phosphate described in Taskier. Samples #2 through #5 illustrate the utilization of both an organic ether and an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as a combination of surfactants which is described in neither Buntin

nor Taskier. Referring now to Table 3, Samples #1 through #6 illustrate the duration (in seconds) required to wet a separator after a duration of 0 days, 22 days, 48 days, 104 days, 122 days, and 256 days of storage at 70°C. The Examiner has completely ignored the fact that Sample #1 (organic ether as its sole surfactant) takes an increasingly longer time to wet as the length of its storage increase (from 21 seconds at 0 days to 91 seconds at 256 days). The Examiner has also ignored the fact that Sample #6 (oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant) loses its ability to wet as the length of its storage increases (from 5 seconds at 0 days to inability to wet at 256 days). In contrast, Samples #2 through #5 require less time to wet as the length of its storage increases (ranging from 7 to 12.3 seconds at 0 days to instantaneous wetting at 256 days). It was clearly an error by the Examiner in failing to properly consider the comparative test data and unexpected results included in the specification of the instant application.

In the alternative, neither Taskier nor Buntin contain any information about using a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate. Applicant's instant invention calls for a separator comprised of a microporous membrane and a coating on



at least one surface of the membrane. (Page 7, Lines 1-3). The coating is comprised of a polymer selected from the group consisting of cellulose acetate (Page 8, Lines 8-9) and a surfactant combination comprised of a first surfactant consisting of organic ethers (Page 10, Lines 4-5) and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate (Page 10, Lines 15-16). Neither Taskier nor Buntin make any allusion to a combination of a first surfactant which is (1) inert to the electrolyte, (2) not soluble or readily soluble in the electrolyte, and (3) adherent to the membrane, and a second surfactant which is (1) inert to the electrolyte and (2) increases the wetting speed and stability of the membrane without interfering with long term membrane storage life. There is no disclosure within Taskier or Buntin that would allow for one skilled in the art to predict that a combination of a first and second surfactant would in any manner result in the superior surfactant combination of Applicant's instant application.

The prior art reference or combination of references relied upon by the Examiner must teach or suggest all of the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1467, 1478 (Fed. Cir. 1997); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability

of that claim against the prior art." ). The teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). In this instance, from the information detailed above, it is clear that Taskier and Buntin fail to teach or suggest all the limitations of Applicant's claims.

The subject matter of Applicant's current application involves a combination of a first and second surfactant used in conjunction with a polymer to coat a battery separator. The combination of the first and second surfactant has a dual purpose with the first purpose being to wet the membrane in aqueous electrolyte in a short period of time (Page 8, Line 24 - Page 9, Line 2) and the second purpose being to maintain the long term storage life of the membrane (Page 10, Lines 1-2). Taskier discloses the use of ethoxylated 2-ethylhexyl phosphate as a surfactant and Buntin discloses the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. Additionally, there is no disclosure within Taskier or Buntin that would allow for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be

used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane.

Based on *KSR v. Teleflex, Inc.* 127 S.Ct. 1727, 167 L.Ed2d 705, 2007 U.S. Lexis 4745 (2007), the obviousness question may be broken down to: Is the invention predictable based upon the prior art? *Id.* at 1740, 721.

Simply, the answer to that question is "no." Hindsight reconstruction is not permitted as the Federal Circuit has repeatedly warned that the requisite motivation to modify a reference must come from the prior art, not Applicant's specification. See *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531-32 (Fed. Cir. 1988) ("there must be a reason or suggestion in the art for selecting the procedure used, other than the knowledge learned from the applicant's disclosure.") Using an Applicant's disclosure as a blueprint to reconstruct the claimed invention from isolated piece of the prior art contravenes the statutory mandate of section 103 of judging obviousness at the point in time when the invention was made. See *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907, 5 U.S.P.Q.2d 1788, 1792 (Fed. Cir. 1988).

Additionally, it is obvious from the Examiner's response to Applicant's first amended application that the Examiner

misunderstood Applicant's argument as being one-fold as evidenced by the reasons stated above.

In the alternative, to establish a *prima facie* case, the PTO must satisfy three requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Skinner*, 2 U.S.P.Q.2d 1788, 1790 (Bd. Pat. App. & Int. 1986).

Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991) (While the idea of using a monkey gene to probe for a homologous human gene may have been "obvious to try," many pitfalls existed that would have eliminated a reasonable expectation of successfully obtaining the EPO gene. "Hindsight is not a justifiable basis on which to find that ultimate achievement of a long sought and difficult scientific goal was obvious."); *In re Erlich*, 3 U.S.P.Q.2d 1011, 1016 (Bd. Pat. App. & Int. 1986) ("[A]t the time the invention was made, one of ordinary skill in the art would have been

motivated to produce monoclonal antibodies specific for human fibroblast interferon using the method of [the prior art] with a reasonable expectation of success.").

Lastly, the prior art reference or combination of references must teach or suggest all the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1476, 1478 (Fed. Cir. 1997); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."). And the teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

The Examiner rejected claims 17-32 citing Taskier as disclosing the use of ethoxylated 2-ethylhexyl phosphate as a surfactant. (Column 21, Lines 65-67. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. The Examiner then relies on Buntin as disclosing the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. (Column 12, Lines 5-8). Again, however, there is no disclosure within Buntin as to the use of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate alone, or in combination with an additional surfactant. The Examiner

erroneously relies on Taskier's mentioning of the use of polymers and copolymers as a precursor film utilized to prepare a microporous film as the motivation to use the combination of surfactants described in Applicant's disclosure. (Column 7, Lines 58-61, Column 8, Line 67 et seq., and Column 17, Lines 63-66). The polymers and copolymers disclosed in Taskier as precursor film are make no allusion as to the use of surfactants to wet the membrane in aqueous electrolyte in a short period of time or maintain the long term storage life of the membrane. Therefore, the Office has not made out a prima facie case of obviousness as the instant invention calls for the use of a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate which is not taught or suggested by either Taskier or Buntin. In the instant case, the proposed modification of the prior art would not have a reasonable expectation of success to wet the membrane in a short period of time and maintain the long term storage life of the membrane, determined from the vantage point of the skilled artisan at the time the invention was made, and therefore the prima facie case must fail and the claims allowed.

In order for the Office to make out a prima facie case it must satisfy the three requirements. For the first requirement, the Examiner must show the prior art relied upon, coupled with

the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. There is no disclosure within Taskier or Buntin that would allow for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane. Taskier goes so far as to state that, "While it is preferred that the microporous substrate be rendered immediately wettable for commercial reasons, it is sufficient for purposes of operability if it eventually wets upon contact with the aqueous alkaline electrolyte solution." (Column 22, Lines 12-16). Buntin only states that polypropylene is not easily wettable and that a variety of surfactants, including an organic ether, may aid in wetting the membrane. (Column 11, Line 59 - Column 12, Line 10). Buntin makes no allusion to wetting times or long term storage life. Third, the prior art reference or combination of references must teach or suggest all the limitations of the claims. By combining the variety of surfactants disclosed in

Taskier with the variety of surfactants disclosed in Buntin, the Examiner argues that Taskier and Buntin teach all of the limitations of the claims in the instant application. However, there is no suggestion within either Taskier or Buntin to combine a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate with the goal of decreased wetting times without affecting long term storage life.

**D. CLAIMS 1-16 ARE NOT OBVIOUS UNDER 35 U.S.C 103(a)**

Claims 1-16 are not obvious under 35 U.S.C. 103(a) over U.S. Patent No. 6,479,190 (hereinafter Wensley) in view of U.S. Patent No. 4,298,666 (hereinafter Taskier).

By ignoring the data, examples, and unexpected results presented in the specification of Applicant's instant application, the Examiner claims to have established a prima facie case of obviousness. An applicant can rebut a prima facie case of obviousness by presenting comparative test data showing that the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have. See *In re Dillon*, 919 F.2d at 692-93, 16 U.S.P.Q.2d at 1901; *In re Chupp*, 816 F.2d 643, 646, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987); *In re Merck*, 800 F.2d 1091, 1098, 231 U.S.P.Q. 375, 380 (Fed. Cir.



1986); *In re Payne*, 606 F.2d 303, 315-16, 203 U.S.P.Q. 245, 256 (C.C.P.A. 1979). In numerous cases involving chemical inventions, the courts and the board have held that a showing of unexpected results rebutted the examiner's prima facie case of obviousness. See, e.g., *In re Hedges*, 783 F.2d 1038, 1041, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986); *In re May*, 574 F.2d 1082, 1094-95, 197 U.S.P.Q. 601, 611 (C.C.P.A. 1978); *In re Orfeo*, 440 F.2d 439, 442, 169 U.S.P.Q. 487, 489 (C.C.P.A. 1971); *Ex parte Ebata*, 19 U.S.P.Q.2d 1952, 1956 (Bd. Pat. App. & Int. 1991).

In the instant application, the Examples section describes and illustrates six samples in Tables 1, 2, and 3. (Page 13, Line 18 - Page 16, Table 3). Referring to Table 1, it is illustrated that Sample #1 utilized an organic ether as its sole surfactant, as described in Wensley. Sample #6 illustrates the utilization of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant, as similar to the ethoxylated 2-ethylhexyl phosphate described in Taskier. Samples #2 through #5 illustrate the utilization of both an organic ether and an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as a combination of surfactants which is described in neither Wensley nor Taskier. Referring now to Table 3, Samples #1 through #6 illustrate the duration (in seconds) required to wet a separator after a duration of 0 days, 22 days, 48 days, 104 days, 122 days, and 256 days of storage at 70°C. The Examiner has

completely ignored the fact that Sample #1 (organic ether as its sole surfactant) takes an increasingly longer time to wet as the length of its storage increase (from 21 seconds at 0 days to 91 seconds at 256 days). The Examiner has also ignored the fact that Sample #6 (oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant) loses its ability to wet as the length of its storage increases (from 5 seconds at 0 days to inability to wet at 256 days). In contrast, Samples #2 through #5 require less time to wet as the length of its storage increases (ranging from 7 to 12.3 seconds at 0 days to instantaneous wetting at 256 days). It was clearly an error by the Examiner in failing to properly consider the comparative test data and unexpected results included in the specification of the instant application.

In the alternative, neither Taskier nor Wensley contain any information about using a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate. Applicant's instant invention calls for a separator comprised of a microporous membrane and a coating on at least one surface of the membrane. (Page 7, Lines 1-3). The coating is comprised of a polymer selected from the group consisting of cellulose acetate (Page 8, Lines 8-9) and a surfactant combination comprised of a first surfactant

consisting of organic ethers (Page 10, Lines 4-5) and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate (Page 10, Lines 15-16). Neither Taskier nor Wensley make any allusion to a combination of a first surfactant which is (1) inert to the electrolyte, (2) not soluble or readily soluble in the electrolyte, and (3) adherent to the membrane, **and** a second surfactant which is (1) inert to the electrolyte and (2) increases the wetting speed and stability of the membrane without interfering with long term membrane storage life. There is no disclosure within Taskier or Wensley that would allow for one skilled in the art to predict that a combination of a first and second surfactant would in any manner result in the superior surfactant combination of Applicant's instant application.

The prior art reference or combination of references relied upon by the Examiner must teach or suggest all of the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1467, 1478 (Fed. Cir. 1997); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."). The teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir.

1991). In this instance, from the information detailed above, it is clear that Taskier and Wensley fail to teach or suggest all the limitations of Applicant's claims.

The subject matter of Applicant's current application involves a combination of a first and second surfactant used in conjunction with a polymer to coat a battery separator. The combination of the first and second surfactant has a dual purpose with the first purpose being to wet the membrane in aqueous electrolyte in a short period of time (Page 8, Line 24 - Page 9, Line 2) and the second purpose being to maintain the long term storage life of the membrane (Page 10, Lines 1-2). Taskier discloses the use of ethoxylated 2-ethylhexyl phosphate as a surfactant and Wensley discloses the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. Additionally, there is no disclosure within Taskier or Wensley that would allow for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane.

Based on *KSR v. Teleflex, Inc.* 127 S.Ct. 1727, 167 L.Ed2d 705, 2007 U.S. Lexis 4745 (2007), the obviousness question may be broken down to: Is the invention predictable based upon the prior art? *Id.* at 1740, 721.

Simply, the answer to that question is "no." Hindsight reconstruction is not permitted as the Federal Circuit has repeatedly warned that the requisite motivation to modify a reference must come from the prior art, not Applicant's specification. See *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531-32 (Fed. Cir. 1988) ("there must be a reason or suggestion in the art for selecting the procedure used, other than the knowledge learned from the applicant's disclosure.") Using an Applicant's disclosure as a blueprint to reconstruct the claimed invention from isolated piece of the prior art contravenes the statutory mandate of section 103 of judging obviousness at the point in time when the invention was made. See *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907, 5 U.S.P.Q.2d 1788, 1792 (Fed. Cir. 1988).

Additionally, it is obvious from the Examiner's response to Applicant's first amended application that the Examiner misunderstood Applicant's argument as being one-fold as evidenced by the reasons stated above.

In the alternative, to establish a *prima facie* case, the PTO must satisfy three requirements. First, the prior art

relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Skinner*, 2 U.S.P.Q.2d 1788, 1790 (Bd. Pat. App. & Int. 1986).

Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991) (While the idea of using a monkey gene to probe for a homologous human gene may have been "obvious to try," many pitfalls existed that would have eliminated a reasonable expectation of successfully obtaining the EPO gene. "Hindsight is not a justifiable basis on which to find that ultimate achievement of a long sought and difficult scientific goal was obvious."); *In re Erlich*, 3 U.S.P.Q.2d 1011, 1016 (Bd. Pat. App. & Int. 1986) ("[A]t the time the invention was made, one of ordinary skill in the art would have been motivated to produce monoclonal antibodies specific for human fibroblast interferon using the method of [the prior art] with a reasonable expectation of success.").

Lastly, the prior art reference or combination of references must teach or suggest all the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1476, 1478 (Fed. Cir. 1997); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."). And the teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

The Examiner rejected claims 1-16 citing Taskier as disclosing the use of ethoxylated 2-ethylhexyl phosphate as a surfactant. (Column 21, Lines 65-67. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. The Examiner then relies on Wensley as disclosing the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. (Column 3, Lines 31-37). Again, however, there is no disclosure within Wensley as to the use of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate alone, or in combination with an additional surfactant. The Examiner erroneously relies on Taskier's mentioning of the use of polymers and copolymers as a precursor film utilized to prepare a microporous film as the motivation to use the

combination of surfactants described in Applicant's disclosure. (Column 7, Lines 58-61, Column 8, Line 67 et seq., and Column 17, Lines 63-66). The polymers and copolymers disclosed in Taskier as precursor film are make no allusion as to the use of surfactants to wet the membrane in aqueous electrolyte in a short period of time or maintain the long term storage life of the membrane. Therefore, the Office has not made out a prima facie case of obviousness as the instant invention calls for the use of a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate which is not taught or suggested by either Taskier or Wensley. In the instant case, the proposed modification of the prior art would not have a reasonable expectation of success to wet the membrane in a short period of time and maintain the long term storage life of the membrane, determined from the vantage point of the skilled artisan at the time the invention was made, and therefore the prima facie case must fail and the claims allowed.

In order for the Office to make out a prima facie case it must satisfy the three requirements. For the first requirement, the Examiner must show the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to



combine references. Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. There is no disclosure within Taskier or Wensley that would allow for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane. Taskier goes so far as to state that, "While it is preferred that the microporous substrate be rendered immediately wettable for commercial reasons, it is sufficient for purposes of operability if it eventually wets upon contact with the aqueous alkaline electrolyte solution." (Column 22, Lines 12-16). Wensley only discloses the use of an organic ether as meeting the criteria of a surfactant which is inert to the electrolyte, not soluble or readily soluble in the electrolyte, and adherent to the membrane. (Column 3, Lines 25-33). Wensley makes no allusion to wetting times or long term storage life. Third, the prior art reference or combination of references must teach or suggest all the limitations of the claims. By combining the variety of surfactants disclosed in Taskier with the single surfactant disclosed in Wensley, the Examiner argues that Taskier and Wensley teach all of the limitations of the claims

in the instant application. However, there is no suggestion within either Taskier or Wensley to combine a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate with the goal of decreased wetting times without affecting long term storage life.

E. CLAIMS 17-32 ARE NOT OBVIOUS UNDER 35 U.S.C 103(a)

Claims 17-32 are not obvious under 35 U.S.C. 103(a) over U.S. Patent No. 6,479,190 (hereinafter Wensley) in view of U.S. Patent No. 4,298,666 (hereinafter Taskier).

By ignoring the data, examples, and unexpected results presented in the specification of Applicant's instant application, the Examiner claims to have established a prima facie case of obviousness. An applicant can rebut a prima facie case of obviousness by presenting comparative test data showing that the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have. See *In re Dillon*, 919 F.2d at 692-93, 16 U.S.P.Q.2d at 1901; *In re Chupp*, 816 F.2d 643, 646, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987); *In re Merck*, 800 F.2d 1091, 1098, 231 U.S.P.Q. 375, 380 (Fed. Cir. 1986); *In re Payne*, 606 F.2d 303, 315-16, 203 U.S.P.Q. 245, 256 (C.C.P.A. 1979). In numerous cases involving chemical inventions, the courts and the board have held that a showing of

unexpected results rebutted the examiner's prima facie case of obviousness. See, e.g., *In re Hedges*, 783 F.2d 1038, 1041, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986); *In re May*, 574 F.2d 1082, 1094-95, 197 U.S.P.Q. 601, 611 (C.C.P.A. 1978); *In re Orfeo*, 440 F.2d 439, 442, 169 U.S.P.Q. 487, 489 (C.C.P.A. 1971); *Ex parte Ebata*, 19 U.S.P.Q.2d 1952, 1956 (Bd. Pat. App. & Int. 1991).

In the instant application, the Examples section describes and illustrates six samples in Tables 1, 2, and 3. (Page 13, Line 18 - Page 16, Table 3). Referring to Table 1, it is illustrated that Sample #1 utilized an organic ether as its sole surfactant, as described in Wensley. Sample #6 illustrates the utilization of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant, as similar to the ethoxylated 2-ethylhexyl phosphate described in Taskier. Samples #2 through #5 illustrate the utilization of both an organic ether and an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as a combination of surfactants which is described in neither Wensley nor Taskier. Referring now to Table 3, Samples #1 through #6 illustrate the duration (in seconds) required to wet a separator after a duration of 0 days, 22 days, 48 days, 104 days, 122 days, and 256 days of storage at 70°C. The Examiner has completely ignored the fact that Sample #1 (organic ether as its sole surfactant) takes an increasingly longer time to wet as the length of its storage increase (from 21 seconds at 0 days to 91

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In the alternative, neither Taskier nor Wensley contain any information about using a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate. Applicant's instant invention calls for a separator comprised of a microporous membrane and a coating on at least one surface of the membrane. (Page 7, Lines 1-3). The coating is comprised of a polymer selected from the group consisting of cellulose acetate (Page 8, Lines 8-9) and a surfactant combination comprised of a first surfactant consisting of organic ethers (Page 10, Lines 4-5) and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate (Page 10, Lines 15-16). Neither Taskier nor Wensley

make any allusion to a combination of a first surfactant which is (1) inert to the electrolyte, (2) not soluble or readily soluble in the electrolyte, and (3) adherent to the membrane, **and** a second surfactant which is (1) inert to the electrolyte and (2) increases the wetting speed and stability of the membrane without interfering with long term membrane storage life. There is no disclosure within Taskier or Wensley that would allow for one skilled in the art to predict that a combination of a first and second surfactant would in any manner result in the superior surfactant combination of Applicant's instant application.

The prior art reference or combination of references relied upon by the Examiner must teach or suggest all of the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1467, 1478 (Fed. Cir. 1997); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."). The teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). In this instance, from the information detailed above, it is clear that Taskier and Wensley fail to teach or suggest all the limitations of Applicant's claims.

The subject matter of Applicant's current application involves a combination of a first and second surfactant used in conjunction with a polymer to coat a battery separator. The combination of the first and second surfactant has a dual purpose with the first purpose being to wet the membrane in aqueous electrolyte in a short period of time (Page 8, Line 24 - Page 9, Line 2) and the second purpose being to maintain the long term storage life of the membrane (Page 10, Lines 1-2). Taskier discloses the use of ethoxylated 2-ethylhexyl phosphate as a surfactant and Wensley discloses the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. Additionally, there is no disclosure within Taskier or Wensley that would allow for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane.

Based on *KSR v. Teleflex, Inc.* 127 S.Ct. 1727, 167 L.Ed2d 705, 2007 U.S. Lexis 4745 (2007), the obviousness question may be broken down to: Is the invention predictable based upon the prior art? *Id.* at 1740, 721.

Simply, the answer to that question is "no." Hindsight reconstruction is not permitted as the Federal Circuit has repeatedly warned that the requisite motivation to modify a reference must come from the prior art, not Applicant's specification. See *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531-32 (Fed. Cir. 1988) ("there must be a reason or suggestion in the art for selecting the procedure used, other than the knowledge learned from the applicant's disclosure.") Using an Applicant's disclosure as a blueprint to reconstruct the claimed invention from isolated piece of the prior art contravenes the statutory mandate of section 103 of judging obviousness at the point in time when the invention was made. See *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907, 5 U.S.P.Q.2d 1788, 1792 (Fed. Cir. 1988).

Additionally, it is obvious from the Examiner's response to Applicant's first amended application that the Examiner misunderstood Applicant's argument as being one-fold as evidenced by the reasons stated above.

In the alternative, to establish a *prima facie* case, the PTO must satisfy three requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See *In*

re *Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re *Skinner*, 2 U.S.P.Q.2d 1788, 1790 (Bd. Pat. App. & Int. 1986).

Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991) (While the idea of using a monkey gene to probe for a homologous human gene may have been "obvious to try," many pitfalls existed that would have eliminated a reasonable expectation of successfully obtaining the EPO gene. "Hindsight is not a justifiable basis on which to find that ultimate achievement of a long sought and difficult scientific goal was obvious."); In re *Erlich*, 3 U.S.P.Q.2d 1011, 1016 (Bd. Pat. App. & Int. 1986) ("[A]t the time the invention was made, one of ordinary skill in the art would have been motivated to produce monoclonal antibodies specific for human fibroblast interferon using the method of [the prior art] with a reasonable expectation of success.").

Lastly, the prior art reference or combination of references must teach or suggest all the limitations of the claims. See In re *Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1476, 1478 (Fed. Cir. 1997); In re *Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim



must be considered in judging the patentability of that claim against the prior art."). And the teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

The Examiner rejected claims 17-32 citing Taskier as disclosing the use of ethoxylated 2-ethylhexyl phosphate as a surfactant. (Column 21, Lines 65-67. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. The Examiner then relies on Wensley as disclosing the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. (Column 3, Lines 31-37). Again, however, there is no disclosure within Wensley as to the use of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate alone, or in combination with an additional surfactant. The Examiner erroneously relies on Taskier's mentioning of the use of polymers and copolymers as a precursor film utilized to prepare a microporous film as the motivation to use the combination of surfactants described in Applicant's disclosure. (Column 7, Lines 58-61, Column 8, Line 67 et seq., and Column 17, Lines 63-66). The polymers and copolymers disclosed in Taskier as precursor film are make no allusion as to the use of surfactants to wet the membrane in aqueous electrolyte in a

short period of time or maintain the long term storage life of the membrane. Therefore, the Office has not made out a prima facie case of obviousness as the instant invention calls for the use of a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate which is not taught or suggested by either Taskier or Wensley. In the instant case, the proposed modification of the prior art would not have a reasonable expectation of success to wet the membrane in a short period of time and maintain the long term storage life of the membrane, determined from the vantage point of the skilled artisan at the time the invention was made, and therefore the prima facie case must fail and the claims allowed.

In order for the Office to make out a prima facie case it must satisfy the three requirements. For the first requirement, the Examiner must show the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. There is no disclosure within Taskier or Wensley that would allow for one skilled in the art

to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane. Taskier goes so far as to state that, "While it is preferred that the microporous substrate be rendered immediately wettable for commercial reasons, it is sufficient for purposes of operability if it eventually wets upon contact with the aqueous alkaline electrolyte solution." (Column 22, Lines 12-16).

Wensley only discloses the use of an organic ether as meeting the criteria of a surfactant which is inert to the electrolyte, not soluble or readily soluble in the electrolyte, and adherent to the membrane. (Column 3, Lines 25-33). Wensley makes no allusion to wetting times or long term storage life. Third, the prior art reference or combination of references must teach or suggest all the limitations of the claims. By combining the variety of surfactants disclosed in Taskier with the single surfactant disclosed in Wensley, the Examiner argues that Taskier and Wensley teach all of the limitations of the claims in the instant application. However, there is no suggestion within either Taskier or Wensley to combine a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl

dihydrogen phosphate with the goal of decreased wetting times without affecting long term storage life.

**F. CLAIMS 1-16 ARE NOT OBVIOUS UNDER NONSTATUTORY**  
**OBVIOUSNESS-TYPE DOUBLE PATENTING**

Claims 1-16 are not obvious under nonstatutory obviousness-type double patenting over U.S. Patent No. 6,479,190 (hereinafter Wensley) in view of U.S. Patent No. 4,298,666 (hereinafter Taskier).

In *In re Longi*, the Federal Circuit discussed the similarity between rejections under §103 and "obviousness-type" double patenting:

We note that the Board did not make the instant rejections under §103. However, a double patenting of the obviousness type rejection is "analogous to [a failure to meet] the non-obviousness requirement of 35 U.S.C. §103," except that the patent principally underlying the double patenting rejection is not considered prior art. *In re Braithwaite*, 379 F.2d 594, 600, n.4, 54 C.C.P.A. 1589, 1597, n.4, 154 U.S.P.Q. 29, 34 (1967). Therefore, our analysis concerning the correctness of the Board's decision in the instant case parallels our previous guidelines for a §103 rejection. See, e.g., *In re De Blauwe*, 736 F.2d 699, 222 U.S.P.Q. 191 (Fed. Cir. 1984). *In re Longi*, 759, F.2d at 892 n.4, 225 U.S.P.Q. at 648 n.4.

Rather than file a terminal disclaimer, an applicant may overcome an obviousness-type double patenting rejection by arguing that the rejected claims are patentably distinct from the claims of the patent that is the bases of the rejection.

*General Foods Corp. v. Studiengesellschaft Kohle MbH*, 972 F.2d 1272, 1278, 23 U.S.P.Q.2d 1839, 1843 (Fed. Cir. 1992); *In re Borah*, 354 F.2d 1009, 1018-19, 148 U.S.P.Q. 213, 221 (C.C.P.A. 1966). Overcoming the double patenting rejection "on the merits," in essence, means that the rejected claims need to be shown to be unobvious in view of the claim(s) upon which they were rejected. See *id.*

The rejection of claims 1-16 as unpatentable over Wensley in view of Taskier must fail because all elements of the invention are not disclosed. Specifically, neither Wensley nor Taskier mention "said second surfactant which is an oxirane polymer ...". Thus, claims 1-16 are not unpatentable over Wensley in view of Taskier and should be allowed.

By ignoring the data, examples, and unexpected results presented in the specification of Applicant's instant application, the Examiner claims to have established a prima facie case of obviousness. An applicant can rebut a prima facie case of obviousness by presenting comparative test data showing that the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have. See *In re Dillon*, 919 F.2d at 692-93, 16 U.S.P.Q.2d at 1901; *In re Chupp*, 816 F.2d 643, 646, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987); *In re Merck*, 800 F.2d 1091, 1098, 231 U.S.P.Q. 375, 380 (Fed. Cir. 1986); *In re Payne*, 606 F.2d 303, 315-16, 203 U.S.P.Q. 245, 256

(C.C.P.A. 1979). In numerous cases involving chemical inventions, the courts and the board have held that a showing of unexpected results rebutted the examiner's prima facie case of obviousness. See, e.g., *In re Hedges*, 783 F.2d 1038, 1041, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986); *In re May*, 574 F.2d 1082, 1094-95, 197 U.S.P.Q. 601, 611 (C.C.P.A. 1978); *In re Orfeo*, 440 F.2d 439, 442, 169 U.S.P.Q. 487, 489 (C.C.P.A. 1971); *Ex parte Ebata*, 19 U.S.P.Q.2d 1952, 1956 (Bd. Pat. App. & Int. 1991).

In the instant application, the Examples section describes and illustrates six samples in Tables 1, 2, and 3. (Page 13, Line 18 - Page 16, Table 3). Referring to Table 1, it is illustrated that Sample #1 utilized an organic ether as its sole surfactant, as described in Wensley. Sample #6 illustrates the utilization of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant, as similar to the ethoxylated 2-ethylhexyl phosphate described in Taskier. Samples #2 through #5 illustrate the utilization of both an organic ether and an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as a combination of surfactants which is described in neither Wensley nor Taskier. Referring now to Table 3, Samples #1 through #6 illustrate the duration (in seconds) required to wet a separator after a duration of 0 days, 22 days, 48 days, 104 days, 122 days, and 256 days of storage at 70°C. The Examiner has completely ignored the fact that Sample #1 (organic ether as its

sole surfactant) takes an increasingly longer time to wet as the length of its storage increase (from 21 seconds at 0 days to 91 seconds at 256 days). The Examiner has also ignored the fact that Sample #6 (oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant) loses its ability to wet as the length of its storage increases (from 5 seconds at 0 days to inability to wet at 256 days). In contrast, Samples #2 through #5 require less time to wet as the length of its storage increases (ranging from 7 to 12.3 seconds at 0 days to instantaneous wetting at 256 days). It was clearly an error by the Examiner in failing to properly consider the comparative test data and unexpected results included in the specification of the instant application.

In the alternative, neither Taskier nor Wensley contain any information about using a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate. Applicant's instant invention calls for a separator comprised of a microporous membrane and a coating on at least one surface of the membrane. (Page 7, Lines 1-3). The coating is comprised of a polymer selected from the group consisting of cellulose acetate (Page 8, Lines 8-9) and a surfactant combination comprised of a first surfactant consisting of organic ethers (Page 10, Lines 4-5) and a second

surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate (Page 10, Lines 15-16). Neither Taskier nor Wensley make any allusion to a combination of a first surfactant which is (1) inert to the electrolyte, (2) not soluble or readily soluble in the electrolyte, and (3) adherent to the membrane, **and** a second surfactant which is (1) inert to the electrolyte and (2) increases the wetting speed and stability of the membrane without interfering with long term membrane storage life. There is no disclosure within Taskier or Wensley that would allow for one skilled in the art to predict that a combination of a first and second surfactant would in any manner result in the superior surfactant combination of Applicant's instant application.

The prior art reference or combination of references relied upon by the Examiner must teach or suggest all of the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1467, 1478 (Fed. Cir. 1997); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."). The teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). In this instance, from the information detailed above,



it is clear that Taskier and Wensley fail to teach or suggest all the limitations of Applicant's claims.

The subject matter of Applicant's current application involves a combination of a first and second surfactant used in conjunction with a polymer to coat a battery separator. The combination of the first and second surfactant has a dual purpose with the first purpose being to wet the membrane in aqueous electrolyte in a short period of time (Page 8, Line 24 - Page 9, Line 2) and the second purpose being to maintain the long term storage life of the membrane (Page 10, Lines 1-2). Taskier discloses the use of ethoxylated 2-ethylhexyl phosphate as a surfactant and Wensley discloses the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. Additionally, there is no disclosure within Taskier or Wensley that would allow for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane.

Based on *KSR v. Teleflex, Inc.* 127 S.Ct. 1727, 167 L.Ed2d 705, 2007 U.S. Lexis 4745 (2007), the obviousness question may

be broken down to: Is the invention predictable based upon the prior art? *Id.* at 1740, 721.

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G.     CLAIMS 17-32 ARE NOT OBVIOUS UNDER NONSTATUTORY  
          OBVIOUSNESS-TYPE DOUBLE PATENTING

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the claims of the patent that is the bases of the rejection. *General Foods Corp. v. Studiengesellschaft Kohle MbH*, 972 F.2d 1272, 1278, 23 U.S.P.Q.2d 1839, 1843 (Fed. Cir. 1992); *In re Borah*, 354 F.2d 1009, 1018-19, 148 U.S.P.Q. 213, 221 (C.C.P.A. 1966). Overcoming the double patenting rejection "on the merits," in essence, means that the rejected claims need to be shown to be unobvious in view of the claim(s) upon which they were rejected. See *id.*

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In the instant application, the Examples section describes and illustrates six samples in Tables 1, 2, and 3. (Page 13, Line 18 - Page 16, Table 3). Referring to Table 1, it is illustrated that Sample #1 utilized an organic ether as its sole surfactant, as described in Wensley. Sample #6 illustrates the utilization of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as its sole surfactant, as similar to the ethoxylated 2-ethylhexyl phosphate described in Taskier. Samples #2 through #5 illustrate the utilization of both an organic ether and an oxirane polymer with 2-ethylhexyl dihydrogen phosphate as a combination of surfactants which is described in neither Wensley nor Taskier. Referring now to Table 3, Samples #1 through #6 illustrate the duration (in seconds) required to wet a separator after a duration of 0 days, 22 days, 48 days, 104 days, 122 days, and 256 days of storage at 70°C. The Examiner has

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The subject matter of Applicant's current application involves a combination of a first and second surfactant used in conjunction with a polymer to coat a battery separator. The combination of the first and second surfactant has a dual purpose with the first purpose being to wet the membrane in aqueous electrolyte in a short period of time (Page 8, Line 24 - Page 9, Line 2) and the second purpose being to maintain the long term storage life of the membrane (Page 10, Lines 1-2). Taskier discloses the use of ethoxylated 2-ethylhexyl phosphate as a surfactant and Wensley discloses the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. Additionally, there is no disclosure within Taskier or Wensley that would allow for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane.

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Additionally, it is obvious from the Examiner's response to Applicant's first amended application that the Examiner misunderstood Applicant's argument as being one-fold as evidenced by the reasons stated above.

In the alternative, to establish a *prima facie* case, the PTO must satisfy three requirements. First, the prior art

relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Skinner*, 2 U.S.P.Q.2d 1788, 1790 (Bd. Pat. App. & Int. 1986).

Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991) (While the idea of using a monkey gene to probe for a homologous human gene may have been "obvious to try," many pitfalls existed that would have eliminated a reasonable expectation of successfully obtaining the EPO gene. "Hindsight is not a justifiable basis on which to find that ultimate achievement of a long sought and difficult scientific goal was obvious."); *In re Erlich*, 3 U.S.P.Q.2d 1011, 1016 (Bd. Pat. App. & Int. 1986) ("[A]t the time the invention was made, one of ordinary skill in the art would have been motivated to produce monoclonal antibodies specific for human fibroblast interferon using the method of [the prior art] with a reasonable expectation of success.").

Lastly, the prior art reference or combination of references must teach or suggest all the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1476, 1478 (Fed. Cir. 1997); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."). And the teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

The Examiner rejected claims 17-32 citing Taskier as disclosing the use of ethoxylated 2-ethylhexyl phosphate as a surfactant. (Column 21, Lines 65-67. However, as expressly admitted by the Examiner, there is no disclosure within Taskier as to the use of organic ethers alone, or in combination with an additional surfactant. The Examiner then relies on Wensley as disclosing the use of nonylphenoxy poly(ethyleneoxy)ethanol, an organic ether, as a surfactant. (Column 3, Lines 31-37). Again, however, there is no disclosure within Wensley as to the use of an oxirane polymer with 2-ethylhexyl dihydrogen phosphate alone, or in combination with an additional surfactant. The Examiner erroneously relies on Taskier's mentioning of the use of polymers and copolymers as a precursor film utilized to prepare a microporous film as the motivation to use the

combination of surfactants described in Applicant's disclosure. (Column 7, Lines 58-61, Column 8, Line 67 et seq., and Column 17, Lines 63-66). The polymers and copolymers disclosed in Taskier as precursor film are make no allusion as to the use of surfactants to wet the membrane in aqueous electrolyte in a short period of time or maintain the long term storage life of the membrane. Therefore, the Office has not made out a prima facie case of obviousness as the instant invention calls for the use of a combination of a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate which is not taught or suggested by either Taskier or Wensley. In the instant case, the proposed modification of the prior art would not have a reasonable expectation of success to wet the membrane in a short period of time and maintain the long term storage life of the membrane, determined from the vantage point of the skilled artisan at the time the invention was made, and therefore the prima facie case must fail and the claims allowed.

In order for the Office to make out a prima facie case it must satisfy the three requirements. For the first requirement, the Examiner must show the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to



combine references. Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. There is no disclosure within Taskier or Wensley that would allow for one skilled in the art to predict that using a combination of surfactants to coat one or both sides of a membrane to be used as a separator in a nickel-zinc battery would result in a shorter wetting time without affecting the long term storage life of the membrane. Taskier goes so far as to state that, "While it is preferred that the microporous substrate be rendered immediately wettable for commercial reasons, it is sufficient for purposes of operability if it eventually wets upon contact with the aqueous alkaline electrolyte solution." (Column 22, Lines 12-16). Wensley only discloses the use of an organic ether as meeting the criteria of a surfactant which is inert to the electrolyte, not soluble or readily soluble in the electrolyte, and adherent to the membrane. (Column 3, Lines 25-33). Wensley makes no allusion to wetting times or long term storage life. Third, the prior art reference or combination of references must teach or suggest all the limitations of the claims. By combining the variety of surfactants disclosed in Taskier with the single surfactant disclosed in Wensley, the Examiner argues that Taskier and Wensley teach all of the limitations of the claims

in the instant application. However, there is no suggestion within either Taskier or Wensley to combine a first surfactant selected from the group consisting of organic ethers and a second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate with the goal of decreased wetting times without affecting long term storage life.

#### CONCLUSION

In view of the foregoing, Applicant respectfully requests that the Board overturns the Examiner's rejections based on indefiniteness, unpatentability, and obviousness and allows claims 1-32.

## VIII. Claims appendix

1. (original) A battery separator comprising:  
a microporous membrane; and  
a coating on at least one surface of said membrane,  
wherein said coating comprising a mixture of 25-40 weight %  
polymer and 60-75 weight % surfactant combination, wherein said  
polymer being cellulose acetate, and said surfactant combination  
comprising a first surfactant and a second surfactant, said  
first surfactant having an active ingredient selected from the  
group consisting of organic ethers, said second surfactant being  
an oxirane polymer with 2-ethylhexyl dihydrogen phosphate.

2. (original) The separator according to Claim 1, wherein  
said first surfactant and said second surfactant having a 1:1  
weight ratio.

3. (original) The separator according to Claim 1,  
wherein said first surfactant and said second surfactant having  
a 1:3 weight ratio.

4. (original) The separator according to Claim 1, wherein  
said first surfactant and said second surfactant having a 3:1  
weight ratio.

5. (original) The separator according to Claim 1, wherein said cellulose acetate having about 2.5 acetyl groups per glucose.

6. (original) The separator according to Claim 1, wherein said coating being on both surfaces of said membrane.

7. (original) The separator according to Claim 6, wherein said coating having a surface density in the range of 0.30 to 0.43 mg/cm<sup>2</sup>.

8. (original) The separator according to Claim 6, wherein said coating having a surface density in the range of 0.31 to 0.38 mg/cm<sup>2</sup>.

9. (currently amended) The separator according to Claim 6, wherein said separator being stored for a period not less than 22 days and not exceeding 256 days at 70°Ce, and said separator having an electrical resistance of  $\leq 10$  milliohms-inch<sup>2</sup>.

10. (currently amended) The separator according to Claim 6, wherein said separator being stored for a period not less

than 22 days and not exceeding 256 days at 70°Ce, and said separator having an electrical resistance in the range of 7.7 to 10 milliohms-inch<sup>2</sup>.

11. (original) The separator according to Claim 6, wherein said separator being adapted for wetting by an aqueous electrolyte.

12. (original) The separator according to Claim 11, wherein said separator being freshly coated, and said separator being wetted within 8 seconds or less.

13. (currently amended) The separator according to Claim 11, wherein said separator being stored for a period not less than 22 days and not exceeding 256 days at 70°Ce, and said separator being wetted within 1 second or less.

14. (currently amended) The separator according to Claim 11, wherein said separator being stored for a period not less than 22 days and not exceeding 256 days at 70°Ce, and said separator being wetted instantaneously.

15. (original) The separator according to 6, wherein said membrane having a thickness of less than 1.5 mils.

16. (original) The separator according to Claim 6, said separator having an effective average pore size of less than 0.045 micron.

17. (original) A battery having a zinc electrode comprising:

a first electrode;

a second electrode;

an electrolyte; and

a separator, said separator being disposed between said first electrode and said second electrode and said electrolyte being in communications with said electrodes via said separator;

wherein said separator comprises;

a microporous membrane; and

a coating on at least one surface of said membrane, wherein said coating comprising a mixture of 25-40 weight % polymer and 60-75 weight % surfactant combination, wherein said polymer being cellulose acetate, and said surfactant combination comprising a first surfactant and a second surfactant, said first surfactant having an active ingredient selected from the group consisting of organic ethers,

said second surfactant being an oxirane polymer with 2-ethylhexyl dihydrogen phosphate.

18. (original) The battery according to Claim 17, wherein said first surfactant and said second surfactant having a 1:1 weight ratio.

19. (original) The battery according to Claim 17, wherein said first surfactant and said second surfactant having a 1:3 weight ratio.

20. (original) The separator according to Claim 17, wherein said first surfactant and said second surfactant having a 3:1 weight ratio.

21. (original) The battery according to Claim 17, wherein said cellulose acetate having about 2.5 acetyl groups per glucose.

22. (original) The battery according to Claim 17, wherein said coating being on both surfaces of said membrane.

23. (original) The battery according to Claim 22, wherein said coating having a surface density in the range of 0.30 to 0.43 mg/cm<sup>2</sup>.

24. (original) The battery according to Claim 22, wherein said coating having a surface density in the range of 0.31 to 0.38 mg/cm<sup>2</sup>.

25. (currently amended) The battery according to Claim 22, wherein said separator being stored for a period not less than 22 days and not exceeding 256 days at 70°Ce, and said separator having an electrical resistance of  $\leq 10$  milliohms-inch<sup>2</sup>.

26. (currently amended) The battery according to Claim 22, wherein said separator being stored for a period not less than 22 days and not exceeding 256 days at 70°Ce, and said separator having an electrical resistance in a range of 7.7 to 10 milliohms-inch<sup>2</sup>.

27. (original) The battery according to Claim 22, wherein said separator being adapted for wetting by an aqueous electrolyte.



28. (original) The battery according to Claim 27, wherein said separator being freshly coated, and said separator being wetted within 8 seconds or less.

29. (currently amended) The battery according to Claim 27, wherein said separator being stored for a period not less than 22 days and not exceeding 256 days at 70°Ce, and said separator being wetted within 1 second or less.

30. (currently amended) The battery according to Claim 27, wherein said separator being stored for a period not less than 22 days and not exceeding 256 days at 70°Ce, and said separator being wetted instantaneously.

31. (original) The battery according to Claim 22, wherein said membrane having a thickness of less than 1.5 mils.

32. (original) The battery according to Claim 22, said separator having an effective average pore size of less than 0.045 micron.

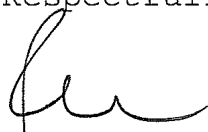
**IX. Evidence Appendix**

1. Definition of 'freshly' from *Webster's New Universal Unabridged Dictionary*, 2nd Edition, New World Dictionaries/Simon and Schuster (2003).
2. Definition of 'freshly' from *Webster's Third New International Dictionary*, Merriam-Webster (1993).

**X. Related proceedings appendix**

There are no related proceedings in the instant application.

Respectfully submitted,



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or controls its motion, as the fold under the tongue; also spelled *fraenum*.

2. a characteristic ridge upon some insects.

**fren'zi-cāl**, *a.* frenzied. [Obs.]

**fren'zied**, *a.* wildly excited; frantic.

**fren'zied-ly**, *adv.* madly; distractedly.

**fren'zy**, *n.*; *pl.* **fren'zies**, [ME. *frensy*, *frenesy*; OFr. *frenesie*; L. *phrenesis*, Gr. *phrenitis*, madness, inflammation of the brain, from *phrēn*, mind.] wild excitement; frantic outburst; brief delirium that is almost insanity.

**fren'zy**, *a.* passionate; madly excited. [Obs.]

**fren'zy**, *v.t.*; *frenzied*, *pt.*, *pp.*; *frenzying*, *ppr.* to fill with frenzy; to make frantic.

**fre'on**, *n.* [fluorine, and refrigerant, and -on as in *neon*, etc.] a colorless gas, CCl<sub>2</sub>F<sub>2</sub>, used especially as a refrigerant; a trade-mark (*Freon*).

**fré'quence**, *n.* [Fr. *fréquence*; L. *frequentia*, a throng, crowd, from *frequens* (-entis), crowded.] 1. a crowd; a throng; a concourse; an assembly. [Obs.]

2. same as *frequency*.

**fré'quen-cy**, *n.*; *pl.* **fré'quen-cies**, 1. originally, (a) the condition of being crowded; (b) a crowd.

2. the fact of occurring often or repeatedly; frequent occurrence.

3. the number of times any action or occurrence is repeated in a given period.

4. in mathematics and statistics, (a) the ratio of the number of actual occurrences to the number of possible occurrences in a given period; (b) the ratio of the number of individuals occurring in a specific class to the total number of individuals under survey.

5. in physics, (a) the number of vibrations or cycles per unit of time; (b) the number of cycles per second of an alternating electric current.

**fré'quen-cy mod-ū-lā'tion**, 1. the changing of the frequency of the transmitting radio wave in accordance with the sound being broadcast.

2. broadcasting that uses this, characterized by freedom from static and more faithful reproduction of sound.

Distinguished from *amplitude modulation*.

**fré'quent**, *a.* [Fr. *frequent*, from L. *frequens* (-entis), crowded, repeated.]

1. often seen or done; happening at short intervals; often repeated or occurring; as, we made *frequent* visits to the hospital.

2. accustomed often to practice anything; as, he was *frequent* and loud in his declamations against the revolution.

3. full; crowded; thronged. [Obs.]

4. told often; of common report. [Obs.]

5. constant; habitual.

**Syn.**—many, repeated, numerous, recurrent, general, continual, usual, common, recurring.

**fré'quent'**, *v.t.*; *frequented*, *pt.*, *pp.*; *frequenting*, *ppr.* [Fr. *frequenter*, from L. *frequentare*, to fill, crowd, visit often, from *frequens*, crowded, frequent, repeated.] to visit often; to be at or in habitually; as, they *frequent* the theater.

He *frequented* the court of Augustus. —Dryden.

**fré'quent'ā-ble**, *a.* accessible.

**fré'quent'ā-ge**, *n.* the practice of frequenting. [Rare.]

**fré'quent-tā'tion**, *n.* the act or practice of frequenting.

**fré'quent'ā-tive**, *a.* [LL. *frequentativus*, frequentative; from *frequentare*, to do or make use of frequently.] in grammar, denoting the frequent repetition of an action; as, a *frequentative* verb.

**fré'quent'ā-tive**, *n.* a verb which denotes the frequent occurrence or repetition of an action.

**fré'quent'ēr**, *n.* one who frequents; a constant visitor.

**fré'quent-ly**, *adv.* often; many times; at short intervals; commonly.

**fré'quent-ness**, *n.* the quality of being frequent or often repeated.

**frère** (frâr), *n.* [Fr.] 1. a brother. 2. a friar.

**fres'cade**, *n.* [OFr. *frescade*, *fresquade*, from It. *fresco*, fresh, cool, a cool walk; a shady place.

**fres'cō**, *n.*; *pl.* **fres'cões**, **fres'cōs**, [It. *fresco*, fresh, cool, as noun, coolness, freshness, from O.H.G. *frisc*, fresh.]

1. coolness; shade; a cool, refreshing state of the air. [Obs.]

2. the art or technique of painting with water colors on wet plaster.

3. a picture or design painted by the above method.

*in fresco*; with water colors on wet plaster.

**fres'cō**, *v.t.*; *frescoed*, *pt.*, *pp.*; *frescoing*, *ppr.* to paint in fresco.

**fresh**, *a.*; *comp.* *fresh*; *superl.* *fresh*, [ME. *fresh*, *fresch*, from AS. *fersc*, fresh; D. *versch*; O.H.G. *frisc*; Ice. *ferskr*; Sw. *frisk*; Dan. *frisk*.]

1. brisk; strong; said of the wind.

2. having the color and appearance of youth; lively; as, a *fresh* complexion.

3. new; recently grown or produced; as, *fresh* vegetables; newly laid; as, *fresh* eggs.

4. recently made or obtained; as, a *fresh* supply of goods from the factory.

5. not impaired by time; not forgotten or obliterated; as, the ideas are *fresh* in my recollection.

6. not salt; said of water.

7. recently drawn; pure and cool; not warm or vapid; as, a glass of *fresh* water.

8. original, spontaneous, and stimulating; as, the conversation was *fresh* and delightful.

9. not tired; vigorous; lively; having new vigor; as, he rose *fresh* for the combat.

10. new; that has lately come or arrived; not known before; as, *fresh* news; *fresh* dispatches.

11. sweet; in a good state; not spoiled, rotten, or stale; as, *fresh* milk.

12. not salted, preserved, pickled, etc.; as, *fresh* meat.

13. unpracticed; inexperienced; not before employed; as, a *fresh* hand on board ship.

14. not worn, soiled, faded, etc.; vivid; bright; clean; as, *fresh* linen.

15. additional; further; as, he made a *fresh* start.

16. designating or of a cow that has newly come into the state of a milker, as after having borne a calf.

*fresh out of*; having just sold or used up. [Slang.]

**Syn.**—brisk, strong, vigorous, lively, unimpaired, unfaded, florid, ruddy, new, novel, recent, rare, unpracticed, unaccustomed, unused, inexperienced.

**fresh**, *a.* [from G. *frech*, bold, impudent.]

1. bold; saucy; impertinent; impudent. [Slang.]

2. drunk; tipsy. [Slang.]

**fresh**, *n.* 1. a freshet; a stream in overflow.

2. a spring of fresh water flowing into a river or into the ocean.

3. the mingling of fresh water with turbid or with salt water, especially the mingling of the waters of a river or brook with the salt water of a bay or estuary.

4. a freshman. [College Slang.]

**fresh'en**, *v.t.*; *freshened*, *pt.*, *pp.*; *freshening*, *ppr.* 1. to make fresh; to separate from saline particles; as, to *freshen* water, fish, or meat.

2. to refresh; to revive.

3. in nautical usage, to apply new service to (a cable); as, to *freshen* the hawes.

*to freshen ballast*; to readjust ballast.

*to freshen the hawse*; to pay out or take in a little of the cable of a vessel at anchor, so as to expose another part of it to the fraying action at the hawse hole.

*to freshen the way*; to increase the speed, as of a ship in motion.

**fresh'en**, *v.i.* 1. to grow or become fresh.

2. to have a calf; said of a cow.

3. to come into milk.

**fresh'et**, *n.* 1. a flood or overflowing of a river, on account of heavy rains or melted snow.

2. a stream or rush of fresh water flowing into the sea.

**fresh'-look'ing**, *a.* appearing fresh.

**fresh'ly**, *adv.* 1. in a fresh manner.

2. recently; just now; newly.

**fresh'mān**, *n.*; *pl.* **fresh'men**, 1. a novice; a beginner.

2. a student of the first year in a college or high school.

3. a person in his first year at any enterprise; as, Senator Smith is a *freshman* in Congress.

**fresh'mān**, *a.* of or for first-year students; as, the *freshman* curriculum.

Lord! how the seniors knocked about The *freshman* class of one! —Holmes.

**fresh'mān-ship**, *n.* the state of a freshman.

**fresh'ness**, *n.* the condition or quality of being fresh, in any sense of the word.

**fresh'-new**, *a.* unpracticed. [Obs.]

**fresh'-wa'tēr**, *a.* 1. accustomed to sail on fresh water only; as, a *fresh-water* sailor.

2. raw; unskilled; inexperienced; as, *fresh-water* soldiers.

3. in or of the hinterland; inland.

4. somewhat provincial, obscure, etc.; as, a *fresh-water* college.

5. pertaining to, produced by, or living in water that is fresh, or not salt; as, *fresh-water* geological deposits, *fresh-water* fish.

**fres-i'dōn**, *n.* in logic, one of the valid modes.

**fret**, *n.* a strait. [Obs.]

**fret**, *v.t.*; *fretted*, *pt.*, *pp.*; *fretting*, *ppr.* [ME. *freten*; AS. *fretan*, contr. of *foretan*, to eat up; devour; for-, and *etan*, to eat.]

1. to wear away by gnawing, rubbing, chafing, corroding, rusting, etc.; also, to make a form by wearing away.

2. to gnaw; to eat away; as, a worm *fret* the planks of a ship.

3. to agitate; to disturb; to make rough; to cause to ripple; as, to *fret* the surface of water.

4. to tease; to irritate; to vex; to make angry.

*Fret* not thyself because of evildoers. —Ps. xxxvii.

5. to devour. [Obs.]

**Syn.**—chafe, gall, vex, anger, gnaw, corrode, rub, agitate, disturb.

**fret**, *v.i.* 1. to gnaw (*into*, *on*, or *upon*).

2. to be worn away; to be corroded; worn, frayed, etc.; as, any substance will in time *fret* away by friction.

3. to be agitated; to become rough or disturbed.

4. to be vexed; to be chafed or irritated; to be annoyed or querulous; to worry.

He *frets*, he fumes, he stares, he stamps the ground. —Dryden.

**fret**, *n.* 1. the agitation of the surface of a fluid, as when boiling, fermenting, etc.

2. a wearing away.

3. a worn place.

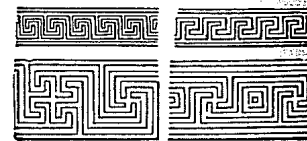
4. irritation; annoyance; worry.

5. in mining, the washed side of a river bank, showing outcroppings by means of which miners are able to locate veins of ore.

6. a cutaneous eruption, as *tetter*; a chafing, as in the folds of the skin of fat children.

**fret**, *v.t.*; *fretted*, *pt.*, *pp.*; *fretting*, *ppr.* [OFr. *fretter*, *fretler*, to cross, interlace, from *fret*, an iron band, ferrule, from LL. *ferrala*, an iron grating.] to ornament with a fret or fretwork.

**fret**, *n.* [OFr. *frete*, an iron band, ferrule, from LL. *ferrala*, an iron grating, iron railing, from L. *ferrum*, iron.]



GRECIAN FRETS

1. an ornamental net or network, especially one formerly worn by women as a headdress.

2. an ornamental pattern of small, straight bars intersecting or joining one another at right angles to form a regular design, as for a border.

3. in architecture, an ornamental pattern of this kind in relief; fretwork.

4. in heraldry, a transverse cross interlaced with a hollow, diamond-shaped figure.

**fret**, *n.* [Fr., a band, a ring, from OFr. *fretler*, to make fast.]

1. any of several narrow, lateral ridges, fastened across the finger board of a banjo, guitar, mandolin, etc. to regulate the fingering.

2. a caul of gold or silver wire worn by ladies in the middle ages.

**fret**, *v.t.* to furnish with frets.

**fret'ful**, *a.* disposed to fret; ill-humored, peevish; angry; in a state of vexation; as, a *fretful* temper.

**Syn.**—peevish, cross, captious. —*Peevish* marks the inward spirit, and *fretful* the outward act, while both imply a complaining impatience. *Crossness* is peevishness mingled with vexation or anger.

**fret'ful-ly**, *adv.* peevishly; angrily.

**fret'ful-ness**, *n.* peevishness; ill-humor; disposition to fret and complain.

**fret saw**, a saw with a long, narrow, fine-toothed blade, for cutting thin wooden boards or metal plates into patterns.

**frette**, *n.* [Fr., a hoop.] a hoop of steel or wrought iron for strengthening the outside of a cannon or gun.

**fret'ed**, [past tense and past participle of *fret* (to ornament).] *a.* decorated with frets.

**fret'ed**, [past tense and past participle of *fret* (to vex).] *a.* 1. away; chafed.

2. worried; anxious; discontented.

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